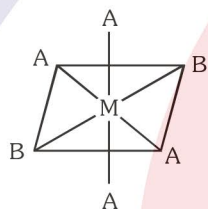


1. In the complex ion  $[\text{Fe}(\text{EDTA})]^-$  the coordination number and oxidation state of central metal ion is :-  
 (1) C. N. = 6      O. N. = +3  
 (2) C.N. = 1      O. N. = -1  
 (3) C. N. = 4      O. N. = +2  
 (4) C. N. = 3      O. N. = +3
2. Select bidentate or didentate ligand from the following .  
 (1) CO      (2)  $\text{SCN}^-$   
 (3)  $\text{CH}_3\text{COO}^-$       (4)  $\text{C}_2\text{O}_4^{2-}$
3. The oxidation and coordination number of Pt in  $[\text{Pt}(\text{C}_2\text{H}_4)\text{Cl}_3]^-$  is respectively :-  
 (1) + 1, 3      (2) + 2, 4  
 (3) + 3, 6      (4) + 2, 5
4. Give the IUPAC name of the complex compound  $[\text{Co}(\text{NH}_3)_4(\text{H}_2\text{O})\text{Br}(\text{NO}_3)_2]$ .  
 (1) Bromoaquatetraamine Cobalt (III) nitrate  
 (2) Bromoaquatetraaminocobalt (III) nitrate  
 (3) Bromoaquatetraammine cobalet (III) nitrate  
 (4) Tetraammineaquabromido cobalt (III) nitrate
5. Which of the following complex is anion :-  
 (1) Fluoro pentaammine cobalt (III)  
 (2) Trioxalato ferrate (III)  
 (3) Penta Carbonyl iron (0)  
 (4) Dichloro diammine platinum
6. The IUPAC name for  $[\text{Co}(\text{NH}_3)_6][\text{Cr}(\text{CN})_6]$  is :-  
 (1) Hexaammine cobalt (III) hexacyanochromate (III)  
 (2) Hexacyanochromium cobalt hexaammine (VI)  
 (3) Hexaammine cobalt (III) hexacyanochromium (VI)  
 (4) Hexacyanochromium (III) hexaammine cobalt (III)
7. Which of the following has least conductivity in aqueous solution.  
 (1)  $\text{Co}(\text{NH}_3)_4\text{Cl}_3$       (2)  $\text{Co}(\text{NH}_3)_3\text{Cl}_3$   
 (3)  $\text{Co}(\text{NH}_3)_5\text{Cl}_3$       (4)  $\text{Co}(\text{NH}_3)_6\text{Cl}_3$
8. The EAN of cobalt in the complex ion  $[\text{Co}(\text{en})_2\text{Cl}_2]^+$  is :-  
 (1) 27      (2) 36      (3) 33      (4) 35
9. Which gives only 25% mole of AgCl, when reacts with  $\text{AgNO}_3$  :-  
 (1)  $\text{PtCl}_2 \cdot 4\text{NH}_3$       (2)  $\text{PtCl}_4 \cdot 5\text{NH}_3$   
 (3)  $\text{PtCl}_4 \cdot 4\text{NH}_3$       (4)  $\text{PtCl}_4 \cdot 3\text{NH}_3$
10. Which of the following compound is paramagnetic  
 (1) Tetracyanonickelate (II) ion  
 (2) Tetraamminezinc (II) ion  
 (3) Hexamine chromium (III) ion  
 (4) Diammine silver (I) ion
11. The shape of the complex  $[\text{Ag}(\text{NH}_3)_2]^+$  is :  
 (1) Octahedral      (2) Square planar  
 (3) Tetrahedral      (4) Linear
12. Hexafluoroferrate (III) ion is an outer orbital complex. The number of unpaired electrons are  
 (1) 1      (2) 5  
 (3) 4      (4) Unpredictable
13. The shape of  $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$  is :  
 (1) Square planar      (2) Pyramidal  
 (3) Octahedral      (4) Tetrahedral
14. The magnetic property and the shape of  $[\text{Cr}(\text{NH}_3)_6]^{3+}$  complex ions are :  
 (1) Paramagnetic, Octahedral  
 (2) Diamagnetic, square planar  
 (3) Paramagnetic, tetrahedral  
 (4) None of the above
15. In the complex  $[\text{Ni}(\text{H}_2\text{O})_2(\text{NH}_3)_4]^{+2}$  the magnetic moment ( $\mu$ ) of Ni is :-  
 (1) Zero      (2) 2.83 BM  
 (3) 1.73 BM      (4) 3.87 BM
16. Which of the following system has maximum number of unpaired electrones :-  
 (1)  $d^5$  (Octahedral, low spin)  
 (2)  $d^8$  (Tetrahedral)  
 (3)  $d^6$  (Octahedral, low spin)  
 (4)  $d^3$  (Octahedral)
17. Match List-I (Complex ions) with List-II (Number of Unpaired Electrons) and select the correct answer using the codes given below the lists :-
- | List -I<br>(Complex ions)          | List II<br>(Number of<br>Unpaired Electrons) |
|------------------------------------|--|
| A. $[\text{CrF}_6]^{4-}$           | i. One                                       |
| B. $[\text{MnF}_6]^{4-}$           | ii. Two                                      |
| C. $[\text{Cr}(\text{CN})_6]^{4-}$ | iii. Three                                   |
| D. $[\text{Mn}(\text{CN})_6]^{4-}$ | iv. Four                                     |
|                                    | v. Five                                      |
- 
- | Code : | A  | B | C   | D |
|--------|----|---|-----|---|
| (1)    | iv | i | ii  | v |
| (2)    | ii | v | iii | i |
| (3)    | iv | v | ii  | i |
| (4)    | ii | i | iii | v |

18. Select most stable complex :-  
 (1)  $[\text{Co}(\text{H}_2\text{O})_6]^{3+}$  (2)  $[\text{Co}(\text{NH}_3)_2(\text{en})_2]^{+3}$   
 (3)  $[\text{Co}(\text{en})_3]^{+3}$  (4)  $[\text{Co}(\text{NH}_3)_4(\text{en})]^{+3}$
19. Which one of the following compounds will exhibit linkage isomerism :-  
 (1)  $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$  (2)  $[\text{Co}(\text{NH}_3)_2\text{NO}_2]\text{Cl}_2$   
 (3)  $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]\text{Cl}$  (4)  $[\text{Co}(\text{en})_2\text{Cl}_2]\text{Cl}$
20. Out of the following which complex will show geometrical isomerism ?  
 (1)  $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$  (2)  $\text{Ni}(\text{CO})_4$   
 (3)  $\text{Na}_3[\text{Ni}(\text{CN})_4]$  (4)  $\text{K}[\text{Ag}(\text{CN})_2]$
21. Which of the following complexes will show optical isomerism ?  
 (1)  $[\text{Cr}(\text{NH}_3)_6]^{2+}$  (2)  $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$   
 (3)  $[\text{Pt}(\text{NH}_3)_3\text{Br}]\text{NO}_3$  (4)  $[\text{Cr}(\text{en})_3]\text{Cl}_3$

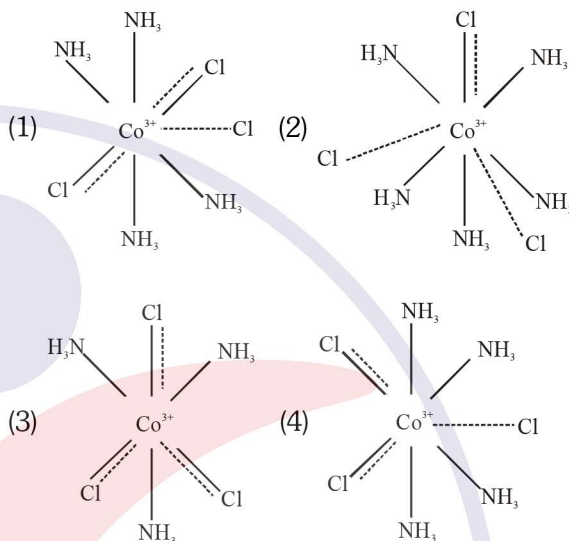


22. The isomer -

can be marked as -

- (1) Cis isomer (2) Leavo isomer  
 (3) Dextro isomer (4) Trans isomer
23. Which of the following complex does no show geometrical isomerism ?  
 (1)  $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]^+$  (2)  $[\text{Co}(\text{NH}_3)_3(\text{NO}_2)_3]$   
 (3)  $[\text{Cr}(\text{en})_3]^{3+}$  (4)  $[\text{Pt}(\text{gly})_2]$
24. Which of the following is  $\pi$ -acid ligand  
 (1)  $\text{NH}_3$  (2)  $\text{CO}$   
 (3) gly. (4) ethylene diamine
25. Compounds which contain one or more metal carbon bonds are called :  
 (1) Organic compound  
 (2) Complex compound  
 (3) Metal carbides  
 (4) OMC compounds.

26. A complex of platinum, ammonia and chloride produces four ions per molecule in the solution. The structure consistent with the observation is:  
 (1)  $[\text{Pt}(\text{NH}_3)_4]\text{Cl}_4$  (2)  $[\text{Pt}(\text{NH}_3)_2\text{Cl}_4]$   
 (3)  $[\text{Pt}(\text{NH}_3)_5\text{Cl}]\text{Cl}_3$  (4)  $[\text{Pt}(\text{NH}_3)_4\text{Cl}_2]\text{Cl}_2$
27. Which of the following Werner's complex has least electrical conductivity ?



28. Which of the following complex shows ionization isomerism  
 (1)  $[\text{Cr}(\text{NH}_3)_6]\text{Cl}_3$  (2)  $[\text{Cr}(\text{en})_2]\text{Cl}_2$   
 (3)  $[\text{Cr}(\text{en})_3]\text{Cl}_3$  (4)  $[\text{CoBr}(\text{NH}_3)_5]\text{SO}_4$
29. The number of unpaired electrons calculated in  $[\text{Co}(\text{NH}_3)_6]^{3+}$  and  $[\text{CoF}_6]^{3-}$  are :  
 (1) 4 and 4 (2) 0 and 2  
 (3) 2 and 4 (4) 0 and 4
30. If  $\lambda_{\text{absorbed}}$  for d-d transition is in order  $[\text{Ti}(\text{X})_6]^{3+} > [\text{Ti}(\text{Y})_6]^{3+} > [\text{Ti}(\text{Z})_6]^{3+}$ .  
 Select correct order of strength of ligands (X, Y, Z are monodentate ligand)-  
 (1)  $\text{Z} > \text{Y} > \text{X}$   
 (2)  $\text{X} > \text{Y} > \text{Z}$   
 (3)  $\text{Z} > \text{X} > \text{Y}$   
 (4) Not predictable

ANSWER KEY

Exercise-I

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	4	2	4	2	1	2	2	4	3
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	4	2	1	1	2	4	3	3	2	1
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	4	4	3	2	4	3	3	4	4	1